



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/560,048

06/05/2006

Isao Sato

028340-0103

8179

22428 7590 12/24/2008
FOLEY AND LARDNER LLP
SUITE 500
3000 K STREET NW
WASHINGTON, DC 20007

EXAMINER

CHAWAN, SHEELA C

ART UNIT

PAPER NUMBER

2624

MAIL DATE

DELIVERY MODE

12/24/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/560,048	Applicant(s) SATO ET AL.	
	Examiner SHEELA C. CHAWAN	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12/8/05, 9/5/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Preliminary Amendment

1. Preliminary amendment filed on 12/8/05 has been entered.

Claims 7-13 are new claims.

Claims 1- 13 are pending in the application.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

3. The information disclosure statement (IDS) submitted on 12/8/05, 9/5/06, the information disclosure statement is being considered by the examiner.

Drawings

4. The Examiner has approved drawings filed on 12/8/05.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-13 are rejected under 35 U.S.C. 102(e) as being anticipated by

Art Unit: 2624

Matsumoto (US.6, 965,690 B2).

As to claim 1, Matsumoto discloses a three-dimensional shape measurement apparatus comprising (abstract, column 2, lines 40- 63):

a first three-dimensional sensor having a projecting device for projecting a light pattern on a target area, and a image capturing apparatus placed at a first interval from the projecting device to capture an image of the target area on which the light pattern is projected (fig 1, element 12, pattern projecting unit, element 10, target, a three-dimensional sensor may be the imaging camera along with image processor, column 2, lines 54- 57);

a second three-dimensional sensor having a projecting device for projecting a light pattern on the target area, and a image capturing apparatus placed at a second interval longer than the first interval from the projecting device to capture an image of the target area on which the light pattern is projected (note, the image of a reference object taken from different rotational points of the camera would be similar to (second) a plurality of images used for computing a 3-D shape , column 12, lines 54- 62) ;

three-dimensional information computing means for obtaining external shape information on an object present in the target area based on the shift of the pattern on the image acquired with the first three-dimensional sensor(note, column 5, lines 54- 64 , 3-D information computing means is described, also see column 6, lines 8-16) ;

variation information computing means for obtaining variation information on the object based on the shift of the pattern on the image acquired with the second three-dimensional sensor (note, the image of a reference object taken from different rotational

Art Unit: 2624

points of the camera would be similar to (second) a plurality of images used for computing a 3-D shape, column 12, lines 54- 62); and

Information composing means for composing the external shape information and the variation information (column 15, lines 58- 63).

As to claim 2, Matsumoto discloses the three-dimensional shape measurement apparatus as recited in claim 1, wherein the information composing means corrects the variation information based on the external shape information (note, detailed shape calculation using binary patterns, column 14, lines 64- 67, column 15, lines 1-45, explains the shape measurement apparatus and the means of correcting for variation information, also see column 15, lines 5-45).

As to claim 3, Matsumoto discloses the three-dimensional shape measurement apparatus as recited in claim 1, wherein the information composing means performs the composition so as to find out the movement of each point of the object (column 15, lines 30-36, information composing is after correcting the variation by a triangulation process).

As to claim 4, Matsumoto discloses the three-dimensional shape measurement apparatus as recited in claim 2, wherein the information composing means performs the composition so as to find out the movement of each point of the object (note the output is given as three- dimensional model data, column 4, lines 43- 52) calculated from the plurality of image capturing cameras and light pattern projecting apparatus).

As to claim 5, Matsumoto discloses the three-dimensional shape measurement apparatus as recited in claim 1, further comprising information output means for

Art Unit: 2624

displaying the composed results of the information composing means (note the output is given as three- dimensional model data, column 4, lines 43- 52) calculated from the plurality of image capturing cameras and light pattern projecting apparatus, also note fig 11, shows a bird's eye view (wire frame display) of the rough and detailed depth maps and the final depth map obtained from these depth maps, column 15, lines 58- 63).

As to claim 6, Matsumoto discloses the three-dimensional shape measurement apparatus as recited in claim 2, further comprising information output means for displaying the composed results of the information composing means(note the output is given as three- dimensional model data, column 4, lines 43- 52) calculated from the plurality of image capturing cameras and light pattern projecting apparatus, also note fig 11, shows a bird's eye view (wire frame display) of the rough and detailed depth maps and the final depth map obtained from these depth maps, column 15, lines 58- 63).

As to claim 7, Matsumoto discloses the three-dimensional shape measurement apparatus as recited in claim 3, further comprising information output means for displaying the composed results of the information composing means(note the output is given as three- dimensional model data, column 4, lines 43- 52) calculated from the plurality of image capturing cameras and light pattern projecting apparatus, also note fig 11, shows a bird's eye view (wire frame display) of the rough and detailed depth maps and the final depth map obtained from these depth maps, column 15, lines 58- 63).

As to claim 8, Matsumoto discloses the three-dimensional shape measurement apparatus as recited in claim 1, wherein the light pattern is an array of bright spots (note, bright light pattern array is projected by element 12 in fig 1, column 11, lines 14-15).

As to claim 9, Matsumoto discloses the three-dimensional shape measurement apparatus as recited in claim 2, wherein the light pattern is an array of bright spots (note, bright light pattern array is projected by element 12 in fig 1, column 11, lines 14- 15).

As to claim 10, Matsumoto discloses the three-dimensional shape measurement apparatus as recited in claim 3, wherein the light pattern is an array of bright spots (note, bright light pattern array is projected by element 12 in fig 1, column 11, lines 14- 15).

As to claim 11, Matsumoto discloses the three-dimensional shape measurement apparatus as recited in claim 1, wherein the three-dimensional information computing means performs interpolation for points that lack the external shape information (note, the detailed shape calculation missing data points is explained in column 15, lines 48-57, integration is performed 3-D shape data producing steps).

As to claim 12, Matsumoto discloses the three-dimensional shape measurement apparatus as recited in claim 2, wherein the three-dimensional information computing means performs interpolation for points that lack the external shape information (note, the detailed shape calculation missing data points is explained in column 15, lines 48-57, integration is performed 3-D shape data producing steps).

As to claim 13, Matsumoto discloses the three-dimensional shape measurement apparatus as recited in claim 3, wherein the three-dimensional information computing means performs interpolation for points that lack the external shape information (note, the detailed shape calculation missing data points is explained in column 15, lines 48- 57, integration is performed 3-D shape data producing steps).

Other prior art cited

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Nishimura et al., (US. 5761337) discloses a method and apparatus for inspection of the appearance of bumps.

Buhr et al., (US. 5528339) discloses a color image reproduction of scenes with color enhancement and preferential tone mapping.

Stern et al., (US. 6075883) discloses a method and system for imaging an object or pattern.

Henderson et al., (US. 6011595) discloses a method for segmenting a digital image into a foreground region and a key color region.

Contact Information

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to SHEELA C. CHAWAN whose telephone number is (571)272-7446. The examiner can normally be reached on 7.30- 5.00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Werner can be reached on 571-272-7401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free)? If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Sheela C Chawan/

12/20/08

Primary Examiner, Art Unit 2624

Application/Control Number: 10/560,048
Art Unit: 2624

Page 9

Application/Control Number: 10/560,048
Art Unit: 2624

Page 10